This is the Emission Unit Landfill Template for New Source Performance Standards (NSPS), Subpart XXX, Municipal Solid Waste (MSW) landfills which have Non-methane organic compounds (NMOC) emissions less than 34 megagrams per year. These landfills have commenced construction, reconstruction, or modification after July 17, 2014 is subject to NSPS Subpart XXX.

This template is meant to be inserted into the ROP shell document along with the associated parts and appendices that are specific to this template.

Included is the emission unit name, description, and some instructions for Part C, the emission unit summary table. Other emission units may be needed for the ROP. The template requires the landfill to continually calculate its NMOC emissions and submit the results annually.

The requirements for operating the collection and control system for the landfill are not included in this table. If the facility enters the operational stage during the time of the ROP, it will have to comply with those applicable conditions of the Subpart including submission of an amended ROP application.

Blue text is guidance or notes on the use of the template. Delete all blue text prior to issuing the final permit or submitting it with a permit application. Read through all conditions. If this template is being used for an ROP Reopening or Renewal, and the conditions were established in a PTI, the appropriate footnotes which reference enforceability must be added to each applicable condition in the template.

Red text identifies options. Select the option that applies to the source and change the text to black. Delete red text that does not apply and renumber conditions if necessary

C. EMISSION UNIT SPECIAL CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

{REMOVE ANY EMISSION UNITS THAT ARE NOT AT THE SOURCE OR ADD EMISSION UNITS THAT ARE AT THE SOURCE}

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EULANDFILL<34	A Municipal Solid Waste (MSW) landfill that commenced construction, reconstruction, or modification after July 17, 2014. The MSW landfill has a design capacity greater than 2.5 million megagrams and 2.5 million cubic meters, and actual NMOC emissions less than 34 megagrams per year.	{Use mm-dd-yyyy}	NA **-OR-** FGLANDFILL<34
EUASBESTOS	Any active or inactive asbestos disposal at the MSW landfill.	{Use mm-dd-yyyy}	NA **-OR-** FGLANDFILL<34
EUENGINE1	This emission unit, and any replacement of this unit as applicable under R 336.1285(2)(a)(vi), is for a MAKE / MODEL reciprocating internal combustion engine rated at OUTPUT CAPACITY bhp fueled with treated landfill/digester gas to produce electricity. **If you have engines,** the above description must be used in each engine in this Summary Table.	{use mm-dd-yyyy}	FGENGINES, FGRICENSPS FGRICEMACT
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290. Remove this sentence if there are no engine emission units.			

EULANDFILL<34
EMISSION UNIT CONDITIONS

NOTE: If using this table as FGLANDFILL<34, change "EMISSION UNIT CONDITIONS" to "FLEXIBLE GROUP CONDITIONS" and move the Flexible Group Condition table under section "D. FLEXIBLE GROUP SPECIAL CONDITIONS"

DESCRIPTION

A MSW landfill that commenced construction, reconstruction, or modification after July 17, 2014. The MSW landfill has a design capacity greater than 2.5 million megagrams and 2.5 million cubic meters, and actual NMOC emissions less than 34 megagrams per year.

Flexible Group ID: {Enter Flexible Group IDs or NA}
NOTE: If using this table as FGLANDFILL<34, change "Flexible Group ID" to "Emission Unit" delete the Flexible Group name and add the Emission Unit name.

POLLUTION CONTROL EQUIPMENT

{Describe control equipment utilized by the landfill}

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall calculate the annual NMOC emission rates using methods outlined in Appendix 7 or the most recent version of USEPA's Landfill Gas Emissions Model (LandGEM). **(40 CFR 60.764(a)(1))**

2. The permittee shall implement the Odor Management Plan (OMP) as outlined in Appendix 9.[1] **(R 336.1901)** An Odor Management Plan (OMP) may have been required at a facility with historic or current odor issues. Delete condition if the OMP was not required for this facility. Footnote 1 should only be used if the condition came from a PTI. Otherwise, remove footnote 1 and change the rule citation to R 336.1213(2).

See Appendix 7

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall determine NMOC mass emission rate by testing at owner's expense, in accordance with Department requirements. Testing shall be performed using procedures and calculations, as described in Appendices 5 and 7. An alternate method, or a modification to the approved USEPA method, may be specified in an AQD approved test protocol. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and the appropriate AQD District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed

after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and the appropriate AQD District Office within 60 days following the last date of the test. **(R 336.2001, R 336.2003, R 336.2004, 40 CFR 60.762(b)(1), 40 CFR 60.764(a))**

a. Upon completion of each Tier test, the permittee shall compare the results to the NMOC mass emission rate standard of 34 Mg per year. If the results are equal to or greater than 34 Mg, then the permittee shall move to the next higher tier in accordance with the following: Tier 1 and Tier 2 shall be recalculated annually if the NMOC mass emission rate is less than the standard. **(40 CFR 60.764(a)(2) and (3))**

b. Tier 2 testing shall be performed at least once every five years. **(40 CFR 60.764(a)(3))**

c. Tier 3 testing shall be performed to establish a site-specific methane generation rate constant. **(40 CFR 60.764(a)(4))**

d. Tier 4 testing to determine surface methane emissions, as described in Appendix 5, may be used if Tiers 1 through 3 testing demonstrate NMOC mass emissions equal to or greater than 34 Mg per year. **(40 CFR 60.764(a)(6))**

e. Tier 4 testing shall be performed to establish surface methane emissions are below the standard of 500 ppm. **(40 CFR 60.764(a)(6))**

2. Each permittee seeking to use other methods to determine the NMOC concentration or a site-specific methane generation rate constant as an alternative to methods in Tier 2 and Tier 3 must request and have received approval from USEPA prior to submitting a test protocol to AQD. **(40 CFR 60.764(a)(5))**

See Appendices 5 and 7

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall maintain up-to-date, readily accessible, on-site records of the design capacity report which triggered 40 CFR 60.762(b), the current amount of solid waste in place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. The permittee shall keep all records on file in a format acceptable to the AQD District Supervisor and make them available upon request. **(40 CFR 60.768(a))**

See Appendix 7

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

4. The permittee shall submit an annual NMOC emission rate report to the appropriate AQD District Office. This report shall contain an annual or 5-year estimate of the NMOC emission rate and all the data, calculations, sample reports and measurements used to estimate the annual or 5-year emissions. **(40 CFR 60.767(b)(1) and (2))**

5. The permittee shall submit any performance test reports to the AQD Technical Programs Unit and the appropriate AQD District Office, in a format approved by the AQD. **(R 336.2001(5))**

6. The permittee shall submit an initial design capacity report no later than 90 days after the date of commenced construction, modification, or reconstruction. This report must contain the information described in 40 CFR 60.767(a)(2). **(40 CFR 60.767(a)(1) and (2))**

7. The permittee shall submit an amended design capacity report providing notification of an increase in the design capacity of the landfill within 90 days of an increase in the maximum design capacity of the landfill to meet or exceed 2.5 million megagrams and 2.5 million cubic meters. **(40 CFR 60.767(a)(3))**

8. If the permittee elects to recalculate the NMOC emission rate after Tier 2 NMOC sampling and analysis and the resulting rate is less than 34 Mg per year, a revised NMOC emission rate report with the recalculated emission rate shall be submitted within 180 days of the first calculated exceedance of 34 Mg per year.
(40 CFR 60.767(c)(4)(i))

9. If the permittee elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant k, as provided in Tier 3 and the resulting NMOC emission rate is less than 34 Mg per year, a revised NMOC emission rate report and the resulting site-specific methane generation rate constant k shall be submitted within 1 year of the first calculated emission rate equaling or exceeding 34 Mg per year. **(40 CFR 60.767(c)(4)(ii))**

10. If the permittee elects to demonstrate that site-specific surface methane emissions are below 500 ppm methane, then the owner or operator must submit annually a Tier 4 surface emissions report. The initial Tier 4 surface emissions report must be submitted annually, starting within 30 days of completing the fourth quarter of Tier 4 surface emissions monitoring that demonstrates that site-specific surface methane emissions are below 500 ppm methane. **(40 CFR 60.767(c)(4)(iii))**

11. The permittee shall submit a closure report to the appropriate AQD District Office within 30 days of waste acceptance cessation. The AQD may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the AQD, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4). **(40 CFR 60.767(e))**

12. Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the owner or operator must submit the results of each performance test for data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT Web site (*https://www3.epa.gov/ttn/chief/ert/ert_info.html*) at the time of the test. The permittee shall submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI). CEDRI can be accessed through the USEPA's Central Data Exchange (CDX) (*https://cdx.epa.gov/*). **(40 CFR 60.767(i))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. If the calculated NMOC emission rate is calculated to be equal to or greater than 34 Mg per year or the methane concentration from the surface of the landfill is 500 ppm or greater, the permittee shall install a collection and control system in compliance with 40 CFR 60.752(b)(2). Additionally, within 90 days the permittee shall apply for a revision of this permit to reflect applicable requirements of 40 CFR Part 60, Subpart XXX.
(R 336.1216(2), 40 CFR 60.762(b)(1)(ii)(A))

2. The permittee shall comply with all applicable provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subparts A and XXX.
(40 CFR Part 60, Subparts A and XXX)

Footnotes:
[1]This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

EUASBESTOS
EMISSION UNIT CONDITIONS

NOTE: If the landfill has ever received asbestos containing waste materials or if the landfill has future plans to accept asbestos containing waste materials, this table must be included in the ROP.

DESCRIPTION

Any active or inactive asbestos disposal at the MSW landfill.

Flexible Group ID: {Enter Flexible Group IDs or NA}

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. If the landfill accepts asbestos-containing waste materials from a source covered under 40 CFR 61.149, 40 CFR 61.150, or 40 CFR 61.155, the permittee shall meet the following operational requirements: **(40 CFR 61.154)**

   a. Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of 40 CFR 61.154(c) or (d) shall be met. **(40 CFR 61.154(a))**

   b. Unless a natural barrier adequately deters access by the general public, either warning signs and fencing shall be installed and maintained as required in 40 CFR 61.154(b) or the requirements of 40 CFR 61.154(c)(1) must be met. **(40 CFR 61.154(b))**

      i. Warning signs shall be displayed at all entrances and at intervals of 100 m (330 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. **(40 CFR 61.154(b)(1))** The warning signs must:

         (1) Be posted in such a manner and location that a person can easily read the legend. **(40 CFR 61.154(b)(1)(i))**

         (2) Conform to the requirements of 51 cm by 36 cm (20 inches by 14 inches) upright format signs specified in 29 CFR 1910.145(d)(4) and 40 CFR 61.154(b)(1). **(40 CFR 61.154(b)(1)(ii))**

         (3) The permittee shall display the legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in 40 CFR 61.154(b)(1). Spacing between any two lines must be at least equal to the height of the upper of the two lines. **(40 CFR 61.154(b)(1)(iii))**

      ii. The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public. **(40 CFR 61.154(b)(2))**

      iii. Upon request and supply of appropriate information, the appropriate AQD District Supervisor will determine whether a fence or a natural barrier adequately deters access by the general public. **(40 CFR 61.154(b)(3))**

c. Rather than meet the no visible emission requirement of 40 CFR 61.154(a), at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall:

i. Be covered with at least 15 cm (6 inches) of compacted non-asbestos-containing material. **(40 CFR 61.154(c)(1))** or

ii. Be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Such an agent shall be used in the manner and frequency recommended for the particular dust by the dust suppression agent manufacturer to achieve and maintain dust control. Other equally effective dust suppression agents may be used upon prior approval by the appropriate AQD District Supervisor. For purposes of 40 CFR 61.154(c)(2), any used, spent, or other waste oil is not considered a dust suppression agent. **(40 CFR 61.154(c)(2))**

d. Rather than meet the no visible emission requirement of 40 CFR 61.154(a), use an alternative emissions control method that has received prior written approval by the appropriate AQD District Supervisor according to the procedures described in 40 CFR 61.149(c)(2). **(40 CFR 61.154(d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. Any segregated area of asbestos may be excluded from gas collection if documented as provided under 40 CFR 60.758(d). The documentation shall provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area and shall be provided to the AQD upon request. **(40 CFR 60.759(a)(3)(i))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For all asbestos-containing waste material received, the permittee of the active waste disposal site shall:

a. Maintain waste shipment records that include the following information: **(40 CFR 61.154(e)(1))**

i. The name, address, and telephone number of the waste generator. **(40 CFR 61.154(e)(1)(i))**

ii. The name, address, and telephone number of the transporter(s). **(40 CFR 61.154(e)(1)(ii))**

iii. The quantity of the asbestos-containing waste material in cubic meters (cubic yards). **(40 CFR 61.154(e)(1)(iii))**

iv. The presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers. Report in writing to the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the disposal site, by the following working day, the presence of a significant amount of improperly enclosed or uncovered waste. Submit a copy of the waste shipment record along with the report. **(40 CFR 61.154(e)(1)(iv))**

v. The date of the receipt. **(40 CFR 61.154(e)(1)(v))**

b. As soon as possible and no longer than 30 days after receipt of the waste, send a copy of the signed waste shipment record to the waste generator. **(40 CFR 61.154(e)(2))**

c. Upon discovering a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received, attempt to reconcile the discrepancy with the waste generator. If the discrepancy is not resolved within 15 days after receiving the waste, immediately report in writing to the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record). **(40 CFR 61.154(e)(3)**

2. The permittee shall maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area storage. **(40 CFR 61.154(f))**

3. The permittee shall keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing waste excluded from collection as provided in 40 CFR 60.769(a)(3)(i). **(40 CFR 60.768(d)(2))**

4. The permittee shall keep records of one the following regarding any active disposal site where asbestos containing materials have been deposited:

   a. USEPA Method 22 readings demonstrating no visible emissions from any active disposal site where asbestos containing materials have been deposited. These readings are to be taken for 15 minutes each operating day. **(R 336.1213(3))**

   b. Records of the date asbestos waste is received, the amount and type of material that has been used to cover the asbestos waste, and documentation that the cover material was applied in the frequency required in SC III.1.c. **(40 CFR 61.154(c))**

   c. Records pursuant to an alternative emissions control method that has prior written approval of the AQD District Supervisor as required in SC III.1.d. **(40 CFR 61.154(d))**

   The permittee shall keep all records on file in a format acceptable to the AQD District Supervisor and make them available upon request. **(R 336.1213(3), 40 CFR 61.154)**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

4. For all asbestos-containing waste material received, the permittee of the active waste disposal site shall:

   a. Report in writing to the AQD District Supervisor by the following working day, the presence of a significant amount of improperly enclosed or uncovered waste and submit a copy of the waste shipment record along with the report. **(40 CFR 61.154(e)(1)(iv))**

   b. If a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received cannot be reconciled with the waste generator within 15 days after receiving the waste, immediately report in writing to the AQD District Supervisor. **(40 CFR 61.154(e)(3))**

5. The permittee shall notify the AQD Technical Programs Unit and the appropriate AQD District Office in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the appropriate AQD District Office at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. The notice shall include the following information:

   a. Scheduled starting and completion dates. **(40 CFR 61.154(j)(1))**

   b. Reason for disturbing the waste. **(40 CFR 61.154(j)(2))**

   c. Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the AQD or may require changes in the emission control procedures to be used. **(40 CFR 61.154(j)(3))**

d. Location of any temporary storage site and the final disposal site. **(40 CFR 61.154(j)(4))**

6. The permittee shall submit to the AQD District Supervisor, upon closure of the facility, a copy of records of asbestos waste disposal locations and quantities. **(40 CFR 61.154(h))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subparts A and XXX. **(40 CFR Part 60, Subparts A and XXX)**

2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 61, Subparts A and M. **(40 CFR Part 61, Subparts A and M)**

Footnotes:
[1]This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

EUENGINE1
EMISSION UNIT CONDITIONS

If you have an engine table that comes from a Permit to Install (PTI), use this template and copy conditions from the engine table in the PTI to this table. However, make sure to read all the instructions in this table as there is suggested monitoring and recordkeeping conditions within the table.

NOTE: If using this table as FGENGINES, change "EMISSION UNIT CONDITIONS" to "FLEXIBLE GROUP CONDITIONS" and move the flexible group table under section "D. FLEXIBLE GROUP SPECIAL CONDITIONS"

DESCRIPTION

If you have engines, the description below must be used. The description is consistent with what permit section is using.

This emission unit, and any replacement of this unit as applicable under R 336.1285(2)(a)(vi), is for a {MAKE / MODEL} reciprocating internal combustion engine rated at {OUTPUT CAPACITY} bhp fueled with treated landfill/digester gas to produce electricity.

If you are using this as a Flexible Group Table, use the following paragraph for the Description (if not, remove the paragraph):

Reciprocating internal combustion engine(s) fueled with treated landfill gas and used to produce electricity. This flexible group includes the emission units below and any subsequent replacements for those units as applicable under R 336.1285(a)(vi).

Flexible Group ID: {Enter Flexible Group IDs or NA}

NOTE: If using this table as FGENGINES, change "Flexible Group ID" to "Emission Unit" delete the Flexible Group name and add the Emission Unit name(s).

POLLUTION CONTROL EQUIPMENT

{Enter pollution control equipment names or NA}

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1.					

{If NA, remove table}

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1.					

{If NA, remove table}

III. PROCESS/OPERATIONAL RESTRICTION(S)

Include this condition if the facility is replacing engines as part of a normal maintenance program at landfill gas-to-energy facilities, {see Policy AQD-023: Replacement of Engines, Compressors, or Turbines as Part of a Normal Maintenance Program at Landfill Gas-to-Energy Facilities}. If including this condition and there are other conditions here, it needs to be renumbered to be the last condition in this section. **Also, if including this condition, make sure to use the optional condition in Section VI. Monitoring and Recordkeeping.**

1. The permittee shall submit to the AQD District Supervisor, for review and approval, a malfunction abatement/preventative maintenance plan (PM/MAP) for {EUENGINE1 / FGENGINES}. After approval of the PM/MAP by the AQD District Supervisor, the permittee shall not operate {EUENGINE1 / FGENGINES} unless the PM/MAP, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. At a minimum the plan shall include:

   a. Identification of the equipment and, if applicable, air-cleaning device, and the supervisory personnel responsible for overseeing the inspection, maintenance, and repair.

   b. Description of the items or conditions to be inspected and frequency of the inspections or repairs.

   c. Identification of the equipment and, if applicable, air-cleaning device, operating parameters that shall be monitored to detect a malfunction or failure, the normal operating range of these parameters and a description of the method of monitoring or surveillance procedures.

   d. Identification of the major replacement parts that shall be maintained in inventory for quick replacement.

   e. A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

   If the plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine the PM/MAP to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies. **(R 336.1911, R 336.1213(3))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1.

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

{UPDATE THIS TEMPLATE TO ADD THE FOLLOWING CONDITIONS FOR ROP RENEWAL WHEN STACK TESTING IS REQUIRED, IF THE LANGUAGE IS NOT ALREADY IN A PTI. IF THERE ARE NO STACK TESTING REQUIREMENTS, REMOVE THESE CONDITIONS}

{Update or remove colored text and select the appropriate test method to use within the condition. Turn selected test method to black font}

Single pollutant

1. The permittee shall verify {POLLUTANT} emission rates from {EU / FG / PORTION OF THE EU} by testing at the owner's expense, in accordance with the Department requirements. Testing shall be performed using an approved USEPA Method listed in {TEST METHOD} (choose test method based on pollutant). An alternate method, or a modification to the approved USEPA Method, may be specified in an AQD-approved Test Protocol. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

Multiple pollutants

1. The permittee shall verify {POLLUTANT} emission rates from {EU / FG / PORTION OF THE EU} by testing at owner's expense, in accordance with the Department requirements. Testing shall be performed using an approved USEPA Method listed in:

Pollutant	Test Method Reference
PM	40 CFR Part 60, Appendix A; Part 10 of the Michigan Air Pollution Control Rules
PM10/PM2.5	40 CFR Part 51, Appendix M
NOx	40 CFR Part 60, Appendix A
SO_2	40 CFR Part 60, Appendix A
CO	40 CFR Part 60, Appendix A
VOC	40 CFR Part 60, Appendix A
Metals	40 CFR Part 60, Appendix A; 40 CFR Part 61, Appendix B; 40 CFR Part 63, Appendix A
Sulfuric Acid Mist	40 CFR Part 60, Appendix A
Hydrogen Sulfide	40 CFR Part 60, Appendix A
Total Fluoride	40 CFR Part 60, Appendix A
Total Reduced Sulfurs	40 CFR Part 60, Appendix A
Dioxins / Furans	40 CFR Part 60, Appendix A
Hydrogen Chloride	40 CFR Part 60, Appendix A
Hydrogen Halides / Halogens	40 CFR Part 60, Appendix A
Mercury	40 CFR Part 60, Appendix A; 40 CFR Part 61, Appendix B; 40 CFR Part 63, Appendix A
Visible Emission	40 CFR Part 51, Appendix M; 40 CFR Part 60, Appendix A and B
HAPs	40 CFR Part 63, Appendix A

An alternate method, or a modification to the approved USEPA Method, may be specified in an AQD-approved Test Protocol. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

Always include with any stack testing conditions

2. The permittee shall verify the {POLLUTANT} emission rates from {EU / FG / PORTION OF THE EU}, at a minimum, every five years from the date of the last test. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

3. The permittee shall notify the AQD Technical Programs Unit Supervisor and the District Supervisor not less than 30 days of the time and place before performance tests are conducted. **(R 336.1213(3))**

See Appendix 5

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

Include this condition if the facility is replacing engines as part of a normal maintenance program at landfill gas-to-energy facilities, {see Policy AQD-023: Replacement of Engines, Compressors, or Turbines as Part of a Normal Maintenance Program at Landfill Gas-to-Energy Facilities}. If including this condition and there are other conditions here, it needs to be renumbered to be the last condition in this section. **Also, if including this condition, make sure to use the optional condition in Section III. Process/Operational Restrictions.**

1. The permittee shall maintain the following records for EUENGINE1 {if Emission Unit} or each engine in FGENGINES {if Flexible Group}:

   a. Engine manufacturer;

   b. Date engine was manufactured;

c. Engine model number and model year;

d. Maximum engine power;

e. Engine serial number;

f. Engine specification sheet;

g. Date of initial startup of the engine;

h. Date engine was removed from service at this stationary source;

i. Date replacement engine was installed at this stationary source;

j. Manufacturer's data, specifications, and operating and maintenance procedures for each engine;

k. Maintenance activities conducted according to the MAP.

The permittee shall keep the records on file in a format acceptable to the AQD District Supervisor and make them available to the Department upon request. **(R 336.1213(3), R 336.1911)**

See Appendices { } {Enter 3, 4, and/or 7}

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

Only include if there are any stack testing conditions

4. The permittee shall submit any performance test reports {including RATA reports} to the AQD Technical Programs Unit and District Office, in a format approved by the AQD. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1.			

{If NA, remove sentence and table}

IX. OTHER REQUIREMENT(S)

1.

Footnotes:
[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2] This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

D. FLEXIBLE GROUP SPECIAL CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

{REMOVE THIS TABLE IF THERE ARE NO FLEXIBLE GROUPS}

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGLANDFILL<34	This flexible group represents the general MSW landfill with a design capacity greater than 2.5 million megagrams and 2.5 million cubic meters, and actual NMOC emissions less than 34 megagrams per year.	EULANDFILL<34 EUASBESTOS
FGENGINES FGRICENSPS FGRICEMACT {delete names not being used for the FGENGINE table}	Reciprocating internal combustion engine(s) fueled with treated landfill gas and used to produce electricity. This flexible group includes the emission units and any subsequent replacements for those units as applicable under R 336.1285(a)(vi). **If you have engines,** the above description must be used in this Summary Table.	EUENGINE1
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290. Remove this sentence if there are no engine emission units.		

E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provisions set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES

Appendix 1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO_2e	Carbon Dioxide Equivalent
CEMS	Continuous Emission Monitoring System	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
COM	Continuous Opacity Monitoring	°F	Degrees Fahrenheit
Department/ department	Michigan Department of Environment, Great Lakes, and Energy	gr	Grains
		HAP	Hazardous Air Pollutant
EGLE	Michigan Department of Environment, Great Lakes, and Energy	Hg	Mercury
		hr	Hour
EU	Emission Unit	HP	Horsepower
FG	Flexible Group	H_2S	Hydrogen Sulfide
GACS	Gallons of Applied Coating Solids	kW	Kilowatt
GC	General Condition	lb	Pound
GHGs	Greenhouse Gases	m	Meter
HVLP	High Volume Low Pressure*	mg	Milligram
ID	Identification	mm	Millimeter
IRSL	Initial Risk Screening Level	MM	Million
ITSL	Initial Threshold Screening Level	MW	Megawatts
LAER	Lowest Achievable Emission Rate	NMOC	Non-methane Organic Compounds
MACT	Maximum Achievable Control Technology	NO_x	Oxides of Nitrogen
MAERS	Michigan Air Emissions Reporting System	ng	Nanogram
MAP	Malfunction Abatement Plan	PM	Particulate Matter
MSDS	Material Safety Data Sheet	PM10	Particulate Matter equal to or less than 10 microns in diameter
NA	Not Applicable		
NAAQS	National Ambient Air Quality Standards	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NESHAP	National Emission Standard for Hazardous Air Pollutants	pph	Pounds per hour
		ppm	Parts per million
NSPS	New Source Performance Standards	ppmv	Parts per million by volume
NSR	New Source Review	ppmw	Parts per million by weight
PS	Performance Specification	%	Percent
PSD	Prevention of Significant Deterioration	psia	Pounds per square inch absolute
PTE	Permanent Total Enclosure	psig	Pounds per square inch gauge
PTI	Permit to Install	scf	Standard cubic feet
RACT	Reasonable Available Control Technology	sec	Seconds
ROP	Renewable Operating Permit	SO_2	Sulfur Dioxide
SC	Special Condition	TAC	Toxic Air Contaminant
SCR	Selective Catalytic Reduction	Temp	Temperature
SNCR	Selective Non-Catalytic Reduction	THC	Total Hydrocarbons
SRN	State Registration Number	tpy	Tons per year
TEQ	Toxicity Equivalence Quotient	µg	Microgram
USEPA/EPA	United States Environmental Protection Agency	µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
VE	Visible Emissions	yr	Year

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig.

Appendix 2. Schedule of Compliance

{CHOOSE ONE}

The permittee certified in this ROP application that this stationary source is in compliance with all applicable requirements of this ROP except for the following: {Enter condition number(s)}. As a result, the permittee was required to submit a Schedule of Compliance as defined in Rule 119(a), pursuant to Rule 210(2) and Rule 213(4).

A Schedule of Compliance for any applicable requirements that the permittee is not in compliance with at the time of the ROP issuance is supplemental to, and shall not sanction non-compliance with, the underlying applicable requirements on which it is based.

The permittee shall adhere to this schedule of compliance and submit the required certified progress reports accordingly.

Compliance Plan

The permittee outlined the details of achieving compliance in a narrative compliance plan. The details of the compliance plan are outlined below.

{Insert the narrative details from the Compliance Plan that was submitted}

Schedule of Compliance

The following schedule of compliance conforms with the provisions of Rule 119(a) and Rule 213(4).

Emission Unit/ Flexible Group ID and Condition No.	Applicable Requirement	Remedial Measure	Required Action	Milestone Date	Progress Reports

Progress Reports

The permittee shall submit Certified Progress Reports to the appropriate AQD District Supervisor using the EGLE, AQD, Report Certification form (EQP 5736). Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor. **(R 336.1213(4)(b))**

Progress reports shall contain the following information:

The projected dates for achieving scheduled activities, milestones or compliance as required in the schedule of compliance. **(R 336.1213(4)(b)(i))**

The actual dates that the activities, milestones, or compliance are achieved. **(R 336.1213(4)(b)(i))**

An explanation of why any dates in the Schedule of Compliance were not or will not be met. **(R 336.1213(4)(b)(ii))**

A description of any preventative or corrective measures adopted in order to ensure that the schedule of compliance is met. **(R 336.1213(4)(b)(ii))**

{OR}

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. **(R 336.1213(4)(a), R 336.1119(a)(ii))**

Appendix 3. Monitoring Requirements

{CHOOSE ONE}

The following monitoring procedures, methods, or specifications are the details to the monitoring requirements identified and referenced in {Enter emission unit/flexible group}.

{OR}

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4. Recordkeeping

{CHOOSE ONE}

The permittee shall use the following approved formats and procedures for the recordkeeping requirements referenced in {Enter emission unit/flexible group}. Alternative formats must be approved by the AQD District Supervisor.

{OR}

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5. Testing Procedures

The permittee shall use the following approved procedures, to measure the pollutant emissions for the applicable requirements referenced in EULANDFILL<34.

Tier 1

The owner or operator must calculate NMOC mass emission rate utilizing Equation 1 or 2 in Appendix 7, as applicable, and compare it to the standard of 34 Mg per year. **(40 CFR 60.764(a)(2))**

Tier 2

The permittee shall determine the NMOC concentration using the following sampling procedure:

The permittee shall install at least two sample probes per hectare of landfill surface that has retained waste for at least 2 years. If the landfill is larger than 25 hectares in area, only 50 samples are required. The sample probes should be located to avoid known areas of nondegradable solid waste.

The permittee shall collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using 40 CFR Part 60, Appendix A, Methods 25 or 25C.. 40 CFR Part 60, Appendix A, Method 18 may be used to analyze the samples collected by Method 25 or 25C sampling procedure. Taking composite samples from different probes into a single cylinder is allowed; however, equal sample volumes must be taken from each probe. For each composite, the sampling rate, collection times, beginning and ending cylinder vacuums, or alternative volume measurements must be recorded to verify that composite volumes are equal. Composite sample volumes should not be less than one liter unless evidence can be provided to substantiate the accuracy of

smaller volumes. Terminate compositing before the cylinder approaches ambient pressure where measurement accuracy diminishes.

If using Method 18, the permittee must identify all compounds in the sample and, as a minimum, test for those compounds published in the most recent Compilation of Air Pollutant Emission Factors (AP-42), minus carbon monoxide, hydrogen sulfide, and mercury. As a minimum, the instrument must be calibrated for each of the compounds on the list. Convert the concentration of each Method 18 compound to CNMOC as hexane by multiplying by the ratio of its carbon atoms divided by six. If more than the required number of samples is taken, all samples must be used in the analysis.

The permittee must divide the NMOC concentration from 40 CFR Part 60, Method 25 or 25C by six (6) to convert from C_{NMOC} as carbon to C_{NMOC} as hexane. If the landfill has an active or passive gas removal system in place, Method 25 or 25C samples may be collected from these systems instead of surface probes provided the removal system can be shown to provide sampling as representative as the two sampling probe per hectare requirement. For active collection systems, samples may be collected from the common header pipe before the gas moving or condensate removal equipment. For these systems, a minimum of three samples must be collected from the header pipe.

The permittee must recalculate the NMOC mass emission rate using Equation 1 or Equation 2 in Appendix 7 using the average site-specific NMOC concentration from the collected samples. The permittee must compare results to the standard of 34 Mg per year. **(40 CFR 60.764(a)(3))**

Tier 3

The site-specific methane generation rate constant shall be determined using the procedures provided in 40 CFR Part 60, Appendix A, Method 2E. The permittee shall estimate the NMOC mass emission rate using **Equation 1** (40 CFR 60.764(a)(1)(i)) or **Equation 2** (40 CFR 60.764(a)(1)(ii)) and using a site-specific methane generation rate constant (k), and the site-specific NMOC concentration as determined in 40 CFR 60.764(a)(3) instead of the default values provided in 40 CFR 60.764(a)(1). The permittee shall compare the resulting NMOC mass emission rate to the standard of 34 Mg per year. **(40 CFR 60.764(a)(4))**

Tier 4

The landfill owner or operator must demonstrate that surface methane emissions are below 500 parts per million. Surface emission monitoring must be conducted on a quarterly basis using the following procedures. Tier 4 is allowed only if the landfill owner or operator can demonstrate that NMOC emissions are greater than or equal to 34 Mg/yr but less than 50 Mg/yr using Tier 1 or Tier 2. If both Tier 1 and Tier 2 indicate NMOC emissions are 50 Mg/yr or greater, then Tier 4 cannot be used.

The owner or operator must measure surface concentrations of methane along the entire perimeter of the landfill and along a pattern that traverses the landfill at no more than 30-meter intervals using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in 40 CFR 60.765(d). The background concentration must be determined by moving the probe inlet upwind and downwind at least 30 meters from the waste mass boundary of the landfill.

Surface emission monitoring (SEM) must be performed in accordance with 40 CFR Part 60, Appendix A, Section 8.3.1 of Method 21except that the probe inlet must be placed no more than 5 centimeters above the landfill surface; the constant measurement of distance above the surface should be based on a mechanical device such as with a wheel on a pole, except, the owner or operator must use a wind barrier, similar to a funnel, when onsite average wind speed exceeds 4 miles per hour or 2 meters per second or gust exceeding 10 miles per hour. Average on-site wind speed must also be determined in an open area at 5-minute intervals using an on-site anemometer with a continuous recorder and data logger for the entire duration of the monitoring event. The wind barrier must surround the SEM, and must be placed on the ground, to ensure wind turbulence is blocked. SEM cannot be conducted if average wind speed exceeds 25 miles per hour.

Landfill surface areas where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover, and all cover penetrations must also be monitored using a device meeting the specifications provided in 40 CFR 60.765(d).

Each owner or operator seeking to comply with the Tier 4 provisions must maintain records of surface emission monitoring as provided in 40 CFR 60.768(g) and submit a Tier 4 surface emissions report as provided in 40 CFR 60.767(c)(4)(iii).

If after four consecutive quarterly monitoring periods at a landfill, other than a closed landfill, there is no measured concentration of methane of 500 ppm or greater from the surface of the landfill, the owner or operator must continue quarterly surface emission monitoring using the methods specified in this section.

If after four consecutive quarterly monitoring periods at a closed landfill there is no measured concentration of methane of 500 ppm or greater from the surface of the landfill, the owner or operator must conduct annual surface emission monitoring.

If a landfill has installed and operates a collection and control system that is not required by this subpart, then the collection and control system must meet the following criteria: **(40 CFR 60.764(a)(6)(vii))**

(A) The gas collection and control system must have operated for 6,570 out of 8,760 hours preceding the Tier 4 surface emissions monitoring demonstration.

(B) During the Tier 4 surface emissions monitoring demonstration, the gas collection and control system must operate as it normally would to collect and control as much landfill gas as possible.

Appendix 6. Permits to Install

{CHOOSE ONE}

At the time of permit issuance, no Permits to Install have been issued to this facility. Therefore, this appendix is not applicable.

{OR}

{For Initial ROP Issuance}
The following table lists any Permit to Install and/or Operate, that relate to the identified emission units or flexible groups as of the effective date of this ROP. This includes all Permits to Install and/or Operate that are hereby incorporated into Source-Wide PTI No. MI-PTI-{SRN}-{YEAR}. PTIs issued after the effective date of this ROP, including amendments or modifications, will be identified in Appendix 6 upon renewal.

Permit to Install Number	Description of Equipment	Corresponding Emission Unit(s) or Flexible Group(s)

{OR}

{For ROP Renewals}
The following table lists any PTIs issued or ROP revision applications received since the effective date of the previously issued ROP No. MI-ROP-{SRN}-{YEAR}. {Note: this should be the most recently issued ROP, not a

revision. If any revisions have been done since ROP issuance, do not include the "a, b, c" sequential number here.} Those ROP revision applications that are being issued concurrently with this ROP renewal are identified by an asterisk (*). Those revision applications not listed with an asterisk were processed prior to this renewal.

Source-Wide PTI No MI-PTI-{SRN}-{YEAR} {Note: this should be the most recent version of the Source-Wide PTI. Include the latest sequential letter after the number if there was a revision.} is being reissued as Source-Wide PTI No. MI-PTI-{SRN}-{YEAR}.

{For a PTI that does not have an associated ROP revision application or an ROP revision application that does not have an associated PTI, enter NA in the appropriate column in the table below.}

Permit to Install Number	ROP Revision Application Number	Description of Equipment or Change	Corresponding Emission Unit(s) or Flexible Group(s)

Appendix 7. Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in EULANDFILL<34.

Default Values

The permittee shall calculate the NMOC emission rate using either **Equation 1** (the equation provided in 40 CFR 60.764(a)(1)(i)) or **Equation 2** (the equation provided in 40 CFR 60.764(a)(1)(ii)). Both equations may be used if the actual year-to-year solid waste acceptance rate is known, as specified in **Equation 1** (40 CFR 60.764(a)(1)(i)), for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in **Equation 2** (the equation provided in 40 CFR 60.764(a)(1)(ii)), for part of the life of the landfill. The values to be used in both equations are 0.05 per year for k, 170 cubic meters per Mg for L_o, and 4,000 ppm by volume as hexane for the C_{NMOC}. For landfills located in geographical areas with a thirty year annual average precipitation of less than 25 inches, as measured at the nearest representative official meteorologic site, the k value to be used is 0.02 per year. **(40 CFR 60.764(a)(1))**

Equation 1

The following equation shall be used if the actual year-to-year solid waste acceptance rate is known. **(40 CFR 60.764(a)(1)(i))**

$$M_{NMOC} = \sum_{i=1}^{n} 2\,k\,L_o M_i \left(e^{-kt_i}\right)\left(C_{NMOC}\right)\left(3.6\times10^{-9}\right)$$

Where:

M_{NMOC} = Total NMOC emission rate from the landfill, Mg per year

k = methane generation rate constant, year−1

L_o = methane generation potential, cubic meters per Mg solid waste

M_i = mass of solid waste in the ith section, Mg

t_i = age of the i^{th} section, years

C_{NMOC} = concentration of NMOC, ppmv as hexane

3.6×10^{-9} = conversion factor

The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for Mi if documentation of the nature and amount of such wastes is maintained.

Equation 2

The following equation shall be used if the actual year-to-year solid waste acceptance rate is unknown.
(40 CFR 60.764(a)(1)(ii))

$$M_{NMOC} = 2L_o R (e^{-kc} - e^{-kt}) (C_{NMOC}) (3.6 \times 10^{-9})$$

Where:

M_{NMOC} = mass emission rate of NMOC, Mg per year

L_o = methane generation potential, cubic meters per Mg solid waste

R = average annual acceptance rate, Mg per year

k = methane generation rate constant, $year^{-1}$

t = age of landfill, years

C_{NMOC} = concentration of NMOC, ppmv as hexane

c = time since closure, years; for active landfill c = 0 and $e^{-kc} = 1$

3.6×10^{-9} = conversion factor

The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value of R, if documentation of the nature and amount of such wastes is maintained.

Tier 1

The owner or operator must calculate NMOC mass emission rate utilizing Equation 1 or 2 in **Appendix 7**, as applicable, and compare it to the standard of 34 Mg per year. **(40 CFR 60.764(a)(2))**

Tier 2

The permittee shall recalculate the NMOC mass emission rate using the **Equation 1** or **Equation 2** in **Appendix 7** and using the average NMOC concentration from the collected samples (**Tier 2** testing in **Appendix 5**) instead of the default value in the equation provided in 40 CFR 60.764(a)(1). **(40 CFR 60.764(a)(3)(i))**

Tier 3

If the NMOC mass emission rate is less than 34 Mg per year, then the permittee shall submit a periodic emission rate report as provided in 40 CFR 60.757(b)(1) and shall recalculate the NMOC mass emission rate annually, as provided in 40 CFR 60.757(b)(1) using **Equation 1** or **Equation 2**, and using the site-specific methane generation rate constant (**Tier 3**) and NMOC concentration (**Tier 2**) obtained in 40 CFR 60.764(a)(3). The calculation of the methane generation rate constant (**Tier 3**) is performed only once, and the value obtained from this test shall be used in all subsequent annual NMOC emission rate calculations. **(40 CFR 60.764(a)(4)(ii))**

Calculating expected gas generation flow rates from the landfill

For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with 40 CFR 60.752(b)(2)(ii)(A)(*1*), either **Equation 3** or **Equation 4**, below, shall be used. The k and L_o kinetic factors should be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42) or other site specific values demonstrated to be appropriate and approved by the USEPA, Region V. If k has been determined as specified in 40 CFR 60.764(a)(4), the value of k determined from the test shall be used. A value of no more than 15 years shall be used for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure. **(40 CFR 60.755(a)(1))**

If a collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, **Equation 3** or **Equation 4**. If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using **Equation 3** or **Equation 4** or other methods shall be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment. **(40 CFR 60.755(a)(1)(ii))**

Equation 3

For sites with unknown year-to-year solid waste acceptance rate:

$Q_m = 2L_o R (e^{-kc} - e^{-kt})$

Where:

Q_m = maximum expected gas generation flow rate, cubic meters per year

L_o = methane generation potential, cubic meters per Mg solid waste

R = average annual acceptance rate, Mg per year

k = methane generation rate constant, $year^{-1}$

t = age of the landfill at equipment installation plus the time the owner or operator intends to use the gas mover equipment or active life of the landfill, whichever is less. If the equipment is installed after closure, t is the age of the landfill at installation, years

c = time since closure, years (for an active landfill c = 0 and $e^{-kc} = 1$)

Equation 4

For sites with known year-to-year solid waste acceptance rate:

$$Q_M = \sum_{i=1}^{n} 2\,k\,L_o\,M_i\left(e^{-kt_i}\right)$$

Where,

Q_M = maximum expected gas generation flow rate, cubic meters per year

k = methane generation rate constant, $year^{-1}$

L_o = methane generation potential, cubic meters per Mg solid waste

M_i = mass of solid waste in the ith section, Mg

t_i = age of the i^{th} section, years

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use EGLE, AQD, Report Certification form (EQP 5736) and EGLE, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

{CHOOSE ONE}

The permittee shall use the following approved formats and procedures for the reporting requirements referenced in {Enter emission unit/flexible group}. Alternative formats must be approved by the AQD District Supervisor.

{OR}

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

Appendix 9.

An Odor Management Plan (OMP) may have been required at a facility with historic or current odor issues. Delete this Appendix 9 if an OMP was not required for this facility.